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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/628,072

Filing Date: July 25, 2003

Appellant(s): SPALL ET AL.

Heather L. Flanagan, Ph.D.
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed January 15, 2009 appealing from the Office action mailed August 19, 2008.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The Examiner substantially agrees with the appellant's summary of the claimed subject matter noting the first paragraph is a summary of the invention from the specification.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The Examiner substantially agrees with the copies of the pending claims 12-19, 21-25, 51-57 and 59-61 appearing on pages 12-16 of the Appendix to the appellant's brief. The claims on appeal are 51-55, 57 and 59-61.

(8) Evidence Relied Upon

6,312,958	Meyer et al.	11-2001
5,474,937	Anderson, II et al.	12-1995
3,746,634	Atkinson et al.	6-1973
5,981,183	Anderson, II et al.	11-1999

(9) Grounds of Rejection

1. The following ground(s) of rejection are applicable to the appealed claims:

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

2. Claims **51-54 and 59-61** are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,312,958 to Meyer et al. ("Meyer") in view of U.S. Patent No. 5,474,937 to Anderson II et al. ("Anderson '937"). Meyer discloses a liquid

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marker and a method for marking a hydrocarbon liquid comprising adding a first marker having a molar absorptivity of approximately $5 \times 10^4 \text{ L mole}^{-1} \text{ cm}^{-1}$ or greater in the wavelength range of about 600-1000 nm, for example squaraines, phthalocyanines or naphthalocyanines, (column 4 lines 18-25) and adding a second marker that is a molecular marker (column 3 lines 16-28). The markers are molecular markers because they are used to detect adulteration (column 3 lines 1-13). Meyer discloses a total concentration of markers at 1-2000 ppb (0.001-2 ppm), which reads on applicant's claimed first marker concentration of between 1 ppb and 10 ppm (column 15 lines 29-34). The markers of Meyer are capable of being determined by a handheld IR spectrometer as the markers emit fluorescent light in the near-IR range (abstract). Markers that fit within the desired range of Meyer, meaning within 600-1200 nm include alcohols such as ethanol or methanol; ethers such as dioxane; ketones such as acetone; and aliphatic or aromatic hydrocarbons such as octane, xylene (column 14 lines 55-67).

Meyer does not expressly teach *that the second marker is 1) non-radioactive or 2) is enhanced by a deuterium atom.*

Anderson '937 teaches using a chemical substance that is "a non-radioactive isotope of either a chemical element or an inorganic or organic compound" (column 1 lines 64-66). "Any element or compound which can be produced with stable isotopes not generally found in nature is suitable for the chemical substance" (column 4 lines 2-5). Anderson specifically teaches labeling molecular markers with a non-radioactive isotopic tracer such as deuterium (columns 3-4). Examples of molecular markers that

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Anderson teaches labeling with a non-radioactive isotope include solvents taught by Meyer as markers such as acetone, dioxane, ethanol, methanol, octane or xylene (column 4 lines 10-19). The amount of isotopic chemical substance used may be less than 1ppb for certain isotopic compounds and about 1-5 ppb for others (column 3 lines 38-43). Such labeling is cheap and obviously can be used as an additional labeling for molecular markers. The heavy atom may be in any position in the molecule of the chemical substance (column 4 lines 40-41). Having a variety of hydrogens in the molecule to which to substitute the deuterium creates a number of uniquely identifiable combinations that thereby decrease the chance that more than one shipping vessel will contain the same non-radioactive isotope (column 4 lines 40-57).

Anderson '937 teaches that the advantage of the disclosed method is that any compound that can be produced with stable isotopes not generally found in nature may be deuterated (column 4 lines 1-5). Additional advantages to Anderson's molecular markers is that they are readily available, easy to make and non-radioactive. Thus, it would have been obvious for one of ordinary skill in the art to modify the reference of Meyer by adding the marker of Anderson '937 or by deuterating at least one of the markers made up of the disclosed markers that can be produced with stable isotopes not generally found in nature in order to gain the advantages of readily available and easy to make markers that are more environmentally friendly.

3. Claim 55 is rejected under 35 U.S.C. 103(a) as being unpatentable over Meyer in view of Anderson '937, as applied to claims **51-54, 58-61** above, and further in view of U.S. Patent No. 3,746,634 to Atkinson et al ("Atkinson").

See Meyer in view of Anderson '937, supra. Neither Meyer nor Anderson '937 expressly teaches a deuterated polynuclear aromatic hydrocarbon. Anderson '937 incorporates by reference the teachings of Atkinson for disclosing the method of deuterating compounds. Atkinson teaches a method of deuterating a cyclic hydrocarbon having at least 10 carbon atoms and a melting point no greater than 300 degrees Celsius. Based on this teaching, one of ordinary skill in the art would deuterate any hydrocarbon meeting these conditions, including polynuclear aromatic hydrocarbons in order to obtain the predictable result of deuterating the compounds.

4. Claim 57 is rejected under 35 U.S.C. 103(a) as being unpatentable over Meyer in view of Anderson '937, as applied to claims **51-54, 58-61** above, and further in view of Atkinson et al (USP 3,746,634) as applied to claim 55, above, and further in view of U.S. Patent No. 5,981,283 to Anderson, II et al. ("Anderson '283).

See Meyer in view of Anderson '937 and further in view of Atkinson, supra. Meyer, Anderson and Atkinson do not expressly teach that the second marker is one of the list of 1,2-diphenylbenzene, 1,4-diphenylbenze, triphenylmethane, etc. recited in claim 57. Anderson '283 patent teaches using such compounds as tagging agents for hydrocarbon fuels (column 6 lines 4-15). These tagging agents may be used to determine whether fuel has been adulterated (columns 2-3). They are compatible in

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small amounts with the intended use of the fuel and are soluble in the fuel in at least small amounts (column 5 lines 44-48). Thus, it would have been obvious for one of ordinary skill in the art to deuterate any of 1,2-diphenylbenzene, 1,4-diphenylbenzene, triphenylmethane, etc. recited in claims 57 in order to obtain the predictable result of having a readily available, easy to make marker for labeling fuel.

5. Claim **56** is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

(10) Response to Argument

6. Appellants argue that the definition of "molecular marker" differentiates it from a lower reliability absorption marker and cites three separate statements each taken from different pages of the Specification. Appellants further argue that Meyer does not read on the instant claims because Meyer only teaches lower reliability absorption markers.

First, appellants' Appeal Brief is the first time in the course of the prosecution of this application that the Examiner has heard the argument that the definition of "molecular marker" distinguishes it from an absorption marker. Appellants' brief cites statements outside the definition provided in the Specification, statements that do not clarify the definition, but instead add confusion. In an amendment filed May 25, 2007, Appellants filed an amendment to page 11, line 14 of the Specification to address a 35 U.S.C. § 112, 2nd paragraph rejection based on "molecular marker" being unclear. The

amendment defines “molecular marker” as "molecules in which the molecular weight of the molecule is artificially enhanced." This long paragraph definition makes no mention of absorption markers nor does it define molecular markers as a higher reliability marker.

Second, the Examiner notes that the rejection is made not under Meyer alone, but under Meyer in view of Anderson '937. The amendment filed May 25, 2007 defining “molecular marker” further explains that "[t]he molecular marker is more commonly a non-radioactive isotope of such organic solvents as acetone, ...dioxane, ethanol, methanol,...octane,...xylene...." In the rejection, above, Meyer combined with Anderson '937 meets this definition. As stated in the rejection, “[t]he liquid markers that fit within the desired range of Meyer, meaning within 600-1200 nm include alcohols such as ethanol or methanol; ethers such as dioxane; ketones such as acetone; and aliphatic or aromatic hydrocarbons such as octane, xylene (column 14 lines 55-67).” Anderson '937 teaches enhancing compounds with a non-radioactive isotope. The rest of the rejection will not be repeated here. The combination makes obvious the independent claims of the invention.

Third, assuming arguendo that “molecular marker” as defined in the Specification distinguishes between lower reliability absorption markers and higher reliability molecular markers, the combination of Meyer and Anderson '937 reads on this definition as the first marker is disclosed by Meyer and the second marker is disclosed by Anderson '937.

In summary, the definition of "molecular marker" in the instant Specification does not clearly distinguish between a lower reliability absorption marker and a higher reliability molecular marker. Therefore, Meyer alone need not teach using a combination of one lower reliability absorption marker and one higher reliability molecular marker. Meyer combined with Anderson '937 meets the definition provided in the Specification by the May 25, 2007 amendment as well as the definition provided by appellants in the Appeal Brief.

7. Appellants argue that the Examiner has confused the markers of Meyer with markable liquids. This distinction is entirely a semantic one. Whether the compounds are considered markers or markable liquids, the combination of Meyer and Anderson '937 meets the claim language. Meyer teaches using two markers and Anderson teaches one marker. In light of the teachings of Anderson '937, one of ordinary skill in the art would be motivated to either modify the markable liquids of Meyer, or add a third marker from Anderson to Meyer. In the case of adding a third marker, the third marker would meet the definition of the "second marker" in the claims as Anderson teaches labeling the solvents claimed in claim 60 with a non-radioactive isotope. Since the instant preamble uses "comprising" language, three markers read on the instant claims.

8. With respect to claim 55, appellants argue that the claimed aromatic hydrocarbons are saturated while the products described by Anderson '937 are unsaturated. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., saturated) are not recited in the rejected claim(s). Although the

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claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Keri A. Moss/

Examiner, Art Unit 1797

Conferees:

/Vickie Kim/

Supervisory Patent Examiner, Art Unit 1797

/Jennifer Michener/

QAS, TC1700